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CURRENT LITERATURE.

The evolution of plant life.¹

Another book intended as a University Extension manual has recently come to our notice. In these days when college men are eagerly looking for books suitable for interested intelligent but uninstructed people to read—books which will give a connected idea of plant forms and their activities—any title which promises as much as the above will attract attention. But when attention is directed to the book, few, we think, will be able to detect the appropriateness of the title. Instead of discussing the evolution of plant life the author gives us an account of the various groups of plants, with a single prefatory chapter on life, protoplasm, adaptability, division of labor, the cell, tissues, and similar general matters. The remaining chapters on Mycetozoa, Thallophyta, Lichenes, Characeæ, Muscineæ, Pteridophyta, and Phanerogamia, form essentially a much abbreviated textbook on morphology, whose faults, while chiefly those of abridgement, are too often due to confused ideas of homology.

Mr. Massee's statements are often obscure, and this obscurity appears to be traceable sometimes to his ideas and sometimes to the inappropriate phrases chosen to convey his ideas. The definition of metabolism (p. 41) illustrates the former case, and such a phrase as "protection against climate" (p. 18) the latter. In discussing the evolution of sexuality (p. 66) the author goes far astray. Having mentioned examples of conjugation he adds:

"In these examples the greater part of the protoplasm is used up in the formation of the reproductive bodies; but as differentiation in this direction proceeds, we observe that the relative bulk of the individual specialized for reproductive purposes becomes less and less, until we reach Phanerogams, where *the parts concerned in the process, stamens and ovules, or young unfertilized seeds*, usually bear a very small proportion [*sic*] to the whole; and yet in the fertilized seed we get a concentration of all that is required to evolve, under favorable conditions into an individual like the parent form."

This confusion of ideas regarding sexuality in phanerogams and cryptogams continues throughout the entire book, most strikingly on pp. 68, 69, 74. It is so prominent as to excite some wonderment as to where the writer has been these last ten years. It must have been a spot remote or secluded, for we are assured (p. 74) that "the most

¹MASSEE, GEORGE:—The evolution of plant life, lower forms. 12 mo. pp.viii. 242 figs. 38. London: Methuen & Co. 1891. 2sh. 6d.

generally accepted primary division of the vegetable kingdom at the present day is into the two divisions formed by Linnaeus" [i. e., Cryptogams and Phanerogams].

With the bulk of the descriptive part of the book less fault can be found; but surely a writer of a university extension manual ought to take the greatest care not to propagate false conceptions of homologies so fundamental as those dealt with above. The book presenting modern views of plant life and adapted to popular reading remains yet to be written in English.

The essential oils.

The chemistry of plant products, as well as their mode of origin, is always a matter of interest to physiologists. When these products are of economic importance, either medicinally or industrially, interest attaches also to their commercial source. Schimmel & Co. of Leipzig and Prag have long made a specialty of one group of such substances, viz., essential oils. A few years ago they established branch laboratories in this country at Garfield, N. J., in the name of their agents, Fritsche Bros., and placed it under the direction of Dr. Frederick B. Power, one of the best known pharmaceutical chemists in this country. Dr. Power has recently compiled a descriptive catalogue of essential oils and organic chemical preparations,¹ which embraces, in a systematic and comprehensive form, and in alphabetical arrangement, not only all the official and ordinary essential oils met with in commerce, but also a large number of rarer products which have been prepared at various times for strictly scientific or experimental purposes. In connection with each article the botanical source, physical characters, and chemical composition are given, with other special tests for purity when such are known.

The work is divided into three parts, comprising (a) the official essential oils, or those recognized by the U. S. Pharmacopœia of 1890, together with some closely related oils, (b) the non-official essential oils, and (c) organic chemical preparations.

The work is concise in its character, contains a considerable number of references to publications embodying the more important original investigations, and the endeavor has been made to present an accurate record, up to the date of publication, of all the well-substantiated facts relating to the characters and composition of the oils and chemical preparations considered in the work.

It is designed for reference chiefly, and will be found useful to all who are either commercially or scientifically interested in the subjects of which it treats.

¹Small 8vo. pp. 96. New York: Fritsche Bros. \$1.00. To be purchased through B. Westermann & Co., New York.

A compendium of general botany.¹

This book is really a wonder considered from a literary standpoint. It is neat, precise and up to date. One is surprised to find how much has been condensed in so little space. The author has intended it to serve as a guide to the German high school pupils. It ought to serve a similar purpose in this country, but according to the present curriculum of studies it will be found very useful in our colleges and universities.

The arrangement of the subject matter is scientifically correct. Part I, comprising forty-two pages, treats of the cell, part II of tissues and single organs, part III of systems of organs, part IV of reproduction. This is the most interesting part. Here are explained and compared, as in no other textbook, the rotation of gametophytic and sporophytic generations in mosses, vascular cryptogams and phanerogams. Part V treats of the physics and chemistry of plant life, and part VI, comprising six pages, of plant classification.

The author's style is simple yet clear, and scientific. It is not intended as a book for "recreative" reading. The chapter on the general physiology of reproduction is perhaps too deep for the average high school pupil.

The original figures are excellent. The others are well selected from the works of the best authors.—A. SCHNEIDER.

Minor Notices.

THE FOSSIL PLANTS of the Bozeman, Montana, coal fields are listed, with annotations, by Mr. F. H. Knowlton in bulletin 105, U. S. Geological Survey.

PROFESSOR A. S. HITCHCOCK's "Key to spring flora of Manhattan, [Kansas]" is intended to enable beginners to name the angiosperms of that vicinity.

DIRECTIONS FOR DESCRIBING a flowering plant, i. e., a "scheme for plant analysis", based on Gray's "Lessons," have been prepared by F. L. Sargent and published by the Cambridge Botanical Supply Co.

A LIST of the Sphagna, parasitic fungi, and liverworts, collected by Mr. L. S. Cheney in the course of the prosecution of a botanical survey of the Wisconsin river valley, has been separately issued in advance of the publication of the tenth volume of the Trans. Wisconsin Academy. The list will accompany the sets of specimens as distributed.

¹WESTERMAIER, MAX.—*Kompendium der allgemeinen Botanik für Hochschulen*. 8vo pp. 309. figs. 171. Freiberg in Breisgau: Herder'sche Verlagshandlung.

EFFECT OF SPRAYING with fungicides on the growth of nursery stock is the subject of a bulletin (no. 7) from the division of vegetable pathology of the U. S. Department of Agriculture. In general much and valuable improvement showed in such plants by application of fungicides, especially of Bordeaux mixture, and particularly with pears, cherries and plums.

THE NINTH NUMBER of the *Minnesota Botanical Studies* contains three articles. Two of them describe newly devised physiological apparatus, and the third is a bibliography of the subject of the fixation of free nitrogen by plants. The last is by D. T. MacDougal, and embraces over 600 titles. It is proposed to issue a second installment of titles after a time. The apparatus has already been mentioned and also advertised in this journal. Both the auxanometer with its continuous recorder, described by the inventor, W. D. Frost, and the registering balance, also described by its inventor, Alex. P. Anderson, are most excellent instruments, and must prove of great service to investigators and to teachers. Both instruments, of which plates from photographs are given, can be bought at a reasonable price.

THE ANNUAL REPORT of the New Jersey Experiment Station for 1893 includes the report of the botanist, Dr. B. D. Halsted, occupying 150 pages, with 73 illustrations. This part has also been distributed as a separate. The number of topics treated by Dr. Halsted is very large. Most of the illustrations are from photographs by the author. Altogether it shows great industry on the part of the writer, and a sharp eye for interesting matters of observation. Most of the report is upon fungous diseases of plants, of which a great variety are treated, many being of the nature of spot diseases.

Only a small part of this report is now published for the first time. The author has brought together in convenient form the result of his labors for the year, reprinting all papers which had previously appeared. We see no reason, however, why the author should not have followed the usual custom of giving credit to the journals to which he is indebted. In some instances this is done, but we notice articles taken from the *American Florist*, the *Proceedings of the Society for the Promotion of Agricultural Science*, and others, for which no credit is given. This is not only an infringement of a well grounded custom, but it makes it difficult for conscientious writers to properly cite such articles.

The report embraces much admirable work, but it must be a regret that bibliographical details were not more carefully looked after.

THE SECTION *Harpidium* of the genus *Hypnum* was elaborated for the *Muscologia Gallica* by Mr. F. Renauld. These pages have been issued as a separate.¹ M. Renauld's wide knowledge of these forms, very careful descriptions, and critical remarks under the more obscure species will be of great assistance to students of this very difficult group.

THE UNCULTIVATED bast fibers of the United States are treated in a bulletin (no. 6) issued by the U. S. Department of Agriculture in its series of fiber investigations. It has been prepared by C. R. Dodge. A score or more of species find place in the list, including the common and well known plants: *Hibiscus Moscheutos*, *Abutilon Avicennæ*, *Asclepias incarnata*, *Apocynum cannabinum* and others.

IN A preliminary paper on *Nucleolen und Centrosomen* in the *Berichte d. deutsch. bot. Gesells.* 12: 108-117. *pl.* 6. 1894,² which has been distributed as a separate, Dr. J. E. Humphrey shows that the nucleolus can not be regarded as an organ of the cell, since the extrusion and persistence of nucleolar substance during nuclear division is not normal but exceptional and probably pathological. He thinks the nucleoli inactive globules of fluid or semi-fluid substance. The paranucleolus of Strasburger, a crescentic body found often at one margin of the nucleus, is due to faulty fixation methods. He also finds centrospheres in *Psilotum* and *Osmunda*.

WE HAVE received the second edition of the voluminous catalogue of the library attached to the botanical garden of Buitenzorg, Java, of which Dr. Treub is the director. This classified catalogue, arranged under each topic alphabetically by authors, is intended chiefly for the use of the garden staff and visiting botanists. It forms a bulky volume of 371 very large octavo pages (18 × 26^{cm}). The number of titles is not given, but it may be roughly estimated as between 4,000 and 5,000. A table of contents shows the classification adopted and a full index to authors renders reference very easy. Copies of this catalogue may be obtained gratis by addressing the director.

¹ *Musc. Gall.* 2: 368-395. *pl.* 105-113. Mr 1894.

² See also *Annals of Bot.* 8: 373-375. S 1894.